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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/697,010
Filing Date: October 31, 2003
Appellant(s): VEGA ET AL.

William T. Ellis
M. Aamir Haq
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 04/24/2009 appealing from the Office action mailed 01/14/2009.

1. **Real Party in Interest:**

A statement identifying by name the real party in interest is contained in the brief.

2. **Related Appeals and Interferences:**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or having a bearing on the board's decision in the pending appeal.

3. **Status of Claims:**

The statement of the status of claims contained in the brief is correct.

4. **Status of Amendments After Final:**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct. The appellant's footnote at the bottom of Page 4 is correct. The examiner has made the appropriate correction.

5. **Summary of Claimed Subject Matter:**

The summary of claimed subject matter contained in the brief appears to be correct.

6. **Grounds of Rejection to be Reviewed on Appeal:**

Claims 1-2, 6-8, 10-14, 16, and 18-20 are rejected under 35 USC 103(a) as being unpatentable over ***Masuyama et al. (US 6871934 B2)*** in view of ***Fuse. (US 5673071 A)***.

Claims 9 and 17 are rejected under 35 USC 103(a) as being unpatentable over the combined teachings of ***Masuyama et al. (US 6871934 B2)*** and ***Girones et al. (US 6238112 B1)*** in view of ***Audi et al. (US 6705697 B2)***.

Claim 8 is rejected under 35 USC 103(a) as being unpatentable over the combined teachings of ***Masuyama et al. (US 6871934 B2)*** and ***Fuse. (US 5673071 A)*** in view of ***Girones et al. (US 6238112 B1)***.

7. Claims Appendix:

The copy of the appealed claims contained in the Appendix to the brief appears to be correct.

8. Evidence Relied Upon:

5,673,071	Fuse	09-1997
6,238,112	Girones et al.	05-2001
6,705,697	Audi et al.	03-2004
6,871,934	Masuyama et al.	03-2005

9. Grounds of Rejection:

The following ground(s) of rejection are applicable to the appealed claims:

- Claims 1-2, 6-7, 10-14, 16, and 18-20 are rejected under 35 USC 103(a) as being unpatentable over ***Masuyama et al. (US 6871934 B2)*** in view of ***Fuse. (US 5673071 A)***.

Regarding Claim 1, ***Masuyama*** discloses a method of operating a printer of the kind comprising an array of dot printing elements extending in a first direction relative to a page to be printed and which prints at least a part of the page during relative movement between the array and the page in a second direction at an angle to the first direction **(Col 4, Rows 45-65, a printhead comprising a plurality of nozzles moved in the main scanning direction and the paper medium being moved relative to the nozzles in the sub-scanning**

direction), the array comprising a plurality of groups of elements with redundancy among the elements of the group (**Col 5, Rows 16-35, different nozzles are used to print different dots**), the method comprising, in respect of at least one of said groups, initially commencing printing using a subset of the elements in the group (**Col 5, Rows 30-35, keeping a subset of nozzles out of use when printing is first commenced**) and, during the course of printing, increasing the number of elements available to print in the group (**Fig 4, and see Col 5, Rows 58 – Col 6, Row 20**);

wherein each element newly made available to the group is initially made available for use less frequently than the existing element(s) (**Fig 4, for example Scan Pass N+I, nozzles 1-4 had already been used 5 times when nozzles 5-7 are used only once**);

wherein the number of elements in the group available for print is increased as a function of the number of firing pulses sent to the elements of the group (**Col 5, Rows 1-10 in view of Col 10, Rows 25-35, see also Figs 4 and 8. A pulse P1 is applied a nozzle to eject ink from the nozzle and P2 is applied to make a nozzle available for printing. In Fig 4, nozzles with P1 applied are marked with "o" and nozzles with P2 applied are marked with "x". As one can observed from Fig 4, the number of elements in the printhead available for printing increases from pass N-3 to N+5 as more and more pulses P1 and P2 are applied to respective Nozzles 1-16. For example, in N-3, only four nozzles 1-4 are available since only four P1 pulses are applied. But in pass N+5, nozzles 1-16 are available for printing since 16 P1 pulses are applied. This reads on the claimed limitation**).

Masuyama does not teach wherein each element newly made available to the group is use less frequently than the existing elements in a subsequent pass of printing.

Fuse discloses a method for preparing a printhead for printing (**Abstract, a preparatory head drive method**) wherein each element in a printhead newly made available for printing is use less frequently or in a drive frequency lower or less than a normal print head drive frequency in subsequent pass of printing (**Col 12, Rows 20-38, preparatory discharge of ink is driven at a frequency that is lower than the normal drive frequency for printing**).

Fuse suggests a method for preparing nozzles initially left unused for a period of time for normal printing conditions (**Col 3, Rows 22-28**), therefore, it would've been obvious to one of ordinary skill in the art at the time of the invention to modify the printhead of ***Masuyama*** to use element or nozzle newly made available to the group less frequently, or to set head drive frequency of elements newly made available to be lower than the normal print head drive frequency of existing elements whereas the motivation would've been to prepare printhead for printing with reduced ink and preparation time consumption (***Fuse*****, Col 3, Rows 20-40**).

Regarding Claim 2, ***Masuyama*** discloses wherein each redundant group is arranged to print a respective row of dots in the second direction (**Col 5, Rows 15-35, multi-pass printing assigns a fraction of a the total amount of nozzles to print a respective portion of an image or rows of dots in the direction in which the printhead is conveyed. See *Girones*, Col 26, Rows 31-37**).

Regarding Claim 6, ***Masuyama*** discloses wherein at least one element in the group is serviced prior to printing so that it is at least partially operational at the commencement of the print job, printing being commenced using the said at least one serviced element and one non-serviced element (**Col 6, Rows 1-20, preparing the nozzles identified for printing in a first pass for printing while nozzles identified for printing in a second pass is not service yet**).

Masuyama does not teach wherein the non-serviced element initially is made available for use less frequently than the said at least one serviced element.

Fuse discloses a method for preparing a non-serviced printhead for printing (**Abstract, a preparatory head drive method**) wherein prior to any printing, the non-serviced printhead is serviced (**Col 21, Row 4 – Col 22, Row 67, service routine involves driving nozzles to reject ink on the basis of print data received, see Col 15, Rows 1-8. See for example Col 15, Rows 1-65, nozzle drive mode 1**) wherein the non-serviced element initially is made available for use less frequently than the said at least one serviced element (**Col 15, Rows 60-64 and Col 12, Rows 20-38. A fully serviced nozzle would be driven at a normal drive frequency wherein a non-service nozzle initially made available for printing at a drive frequency that is less than the normal drive frequency until the printhead is fully warmed up to a preset temperature, see Col 23, Rows 1-10. Still further, a preparatory head drive frequency is applied to nozzles being made available for printing that does not eject ink but nonetheless raise its temperature, See Col 15, Rows 14-30**).

Masuyama as modified by ***Fuse*** would modify the two passing printing technique as disclosed in Fig 4 to drive serviced nozzles that has been in use at a normal printhead drive frequency and to drive non-serviced that is made newly available at a drive frequency that is less than the normal printhead drive frequency in order to ensure the non-serviced nozzle reaches the proper temperature as taught by equation 2 of ***Fuse*** (**Col 23, Rows 1-10**) where ejection of ink would be stable as.

Regarding Claim 7, ***Masuyama*** discloses prior to commencing printing, identifying portions of the array of printing elements which will be needed at least for a first pass of the array relative to the first page of the print job, and servicing printing elements according to the array portions so identified whereby one or more printing elements outside the identified array portions are not serviced (**Col 6, Rows 1-20, identifying a subset of nozzles for a first printing pass and perform preliminary service on said nozzles only**).

Regarding Claim 10, ***Masuyama*** discloses wherein the printer is an inkjet printer and the dot printing elements are inkjet nozzles (**Col 4, Rows 45-65**).

Regarding Claim 11, ***Masuyama*** discloses an incremental printer (**Figs 1-2**) comprising a plurality of printing elements grouped into redundant groups, each group being arranged to print substantially different portions of a given page of a printjob (**Col 5, Rows 10-35, multi-pass printing where different nozzles are used to print different dots**), the incremental printer being adapted, when commencing a printjob, to control at least one redundant group of printing elements such that only a subset of the printing elements in that group are used to print (**Col 5, Rows 30-35, keeping a subset of nozzles out of use when**

printing is first commenced), the incremental printer being further arranged to subsequently increase the number of printing elements in that group which are used to print (**Fig 4, and see Col 5, Rows 58 – Col 6, Row 20**);

the printer being further arranged, when increasing the number of printing elements in subset of that group, to cause the one or more printing elements newly included in the subset to print for a predetermined duration at a frequency lower than that of one or more printing elements previously included in the subset (**Fig 4, for example Scan Pass N+I, nozzles 1-4 had already been used 5 times when nozzles 5-7 are used only once**).

wherein the number of elements in the group available for print is increased as a function of the number of firing pulses sent to the elements of the group (**Col 5, Rows 1-10 in view of Col 10, Rows 25-35, see also Figs 4 and 8. A pulse P1 is applied a nozzle to eject ink from the nozzle and P2 is applied to make a nozzle available for printing. In Fig 4, nozzles with P1 applied are marked with "o" and nozzles with P2 applied are marked with "x". As one can observed from Fig 4, the number of elements in the printhead available for printing increases from pass N-3 to N+5 as more and more pulses P1 and P2 are applied to respective Nozzles 1-16. For example, in N-3, only four nozzles 1-4 are available since only four P1 pulses are applied. But in pass N+5, nozzles 1-16 are available for printing since 16 P1 pulses are applied. This reads on the claimed limitation**).

Masuyama does not teach wherein each element newly made available to the group is use less frequently than the existing elements in a subsequent pass of printing.

Fuse discloses a method for preparing a printhead for printing (**Abstract, a preparatory head drive method**) wherein each element in a printhead newly made available for printing is use less frequently or in a drive frequency lower or less than a normal print head drive frequency in subsequent pass of printing (**Col 12, Rows 20-38**).

Fuse suggests a method for preparing nozzles initially left unused for a period of time for normal printing conditions (**Col 3, Rows 22-28**), therefore, it would've been obvious to one of ordinary skill in the art at the time of the invention to modify the printhead of ***Masuyama*** to use element or nozzle newly made available to the group less frequently, or to set head drive frequency of elements newly made available to be lower than the normal print head drive frequency of existing elements whereas the motivation would've been to prepare printhead for printing with reduced ink and preparation time consumption (***Fuse*****, Col 3, Rows 20-40**).

Regarding Claim 12, ***Masuyama*** discloses wherein each redundant group is arranged to print a row or column of image data (**Col 5, Rows 15-35, multi-pass printing assigns a fraction of the total amount of nozzles to print a respective portion of an image or rows of dots in the direction in which the printhead is conveyed. See *Girones*, Col 26, Rows 31-37**).

Regarding Claim 16, ***Masuyama*** discloses wherein at least one element in that group is serviced prior to commencing the printjob (**Col 6, Rows 1-20, preparing the nozzles identified for printing in a first pass for printing while nozzles identified for printing in a second pass is not service yet**).

Regarding Claim 18, ***Masuyama*** discloses wherein the printer is an inkjet printer and the printing elements are inkjet nozzles (**Col 4, Rows 45-65**).

Regarding Claims 19-20, ***Masuyama*** does not expressly disclose a control circuit or a control program although it should be inherent that it does in order to execute all the process as disclosed.

Fuse discloses a printer control circuit adapted to control a printer to perform the method of inkjet printing and a computer readable medium containing program instruction which, when executed by a data processing device, control a printer to perform the method of inkjet printing (**Col 5, Row 55 – Col 6, Row 8, CPU 3 implementing a program stored in ROM 6**).

Fuse discloses a method for printing that is very similar to ***Masuyama*** (***Fuse*****, Col 16, Rows 20-35, nozzle drive mode 2**). Therefore, it would've been obvious to one of ordinary skill in the art at the time of the invention to modify ***Masuyama***'s printer with the control system of ***Fuse*** in order to ensure smooth control of inkjet printing.

- Claims 9 and 17 are rejected under 35 USC 103(a) as being unpatentable over the combined teachings of ***Masuyama et al. (US 6871934 B2)*** and ***Girones et al. (US 6238112 B1)*** in view of ***Audi et al. (US 6705697 B2)***.

Regarding Claims 9 and 17, the combined teachings do not disclose wherein the array of printing elements extends substantially fully across the page in the first direction.

Audi discloses incremental printer (**Fig 7**) comprising a plurality of printing elements grouped into redundant groups (**Col 3, Rows 52-65**), each group being arranged to print substantially different portions of a given page of a printjob (**Col 4, Row 60 – Col 5, Row 5**), the incremental printer being adapted, when commencing a printjob, to control at least one redundant group of printing elements such that only a subset of the printing elements in that group are used to print (**Col 5, Rows 30-35, keeping a subset of nozzles out of use when printing is first commenced**), the incremental printer being further arranged to subsequently increase the number of printing elements in that group which are used to print (**Col 7, Rows 25-40, offset or incremental printing; assign a first subset of nozzles to print a different scanline relative to a second subset of nozzles, see Col 6, Rows 34-38**);

wherein the plurality of printing elements form a page wide or a page high array or the array of printing elements extends substantially fully across the page in the first direction (**Col 3, Rows 60-65, page width nozzle array**).

It would've been obvious to one of ordinary skill in the art at the time of the invention to modify the structure of the combined teachings with the page width nozzle array configuration of ***Audi*** whereas the motivation would've been to provide "a page width printer controller that is operable to achieve collinear page width printing for use with a continuously moving recording medium that avoids at least some of the cost associated with reconfiguration of" printing raster data (***Audi*, Col 2, Rows 43-47**).

- Claim 8 is rejected under 35 USC 103(a) as being unpatentable over the combined teachings of ***Masuyama et al. (US 6871934 B2)*** and ***Fuse. (US 5673071 A)*** in view of ***Girones et al. (US 6238112 B1)***.

The combined teachings do not disclose wherein faulty printing elements, as identified by a faulty printing element database, are excluded from being made available to the group.

Girones discloses a printer with at least one printhead comprising a plurality of nozzles (**Col 9, Rows 18-34**) with redundancy (**Col 26, Rows 31-37**) having a method of printing comprising:

performing a plurality of drop tests throughout the course of printing a single plot to determine the latest health status of the plurality of nozzles (**Col 16, Rows 20-54 and see Col 17-18, various scores and indicia indicating the health status of nozzles**);

determine, on the basis of the latest health status of the plurality of nozzles, a probability that each nozzle would work through out the course of printing (**Fig 3 and see Col 25, Rows 5-45, the value of probability changes through out the course of printing after each drop detecting test, Col 25, Rows 40-44**) ;

wherein the process of printing comprising:

commence printing with a group or subset of nozzles initially (**Col 26, Rows 30-37**);

continue printing with a subsequent subset of nozzles made newly available to the group for use in a subsequent pass of the printing (**Col 26, Rows 38-52**);

throughout said process of printing, design and otherwise update a printmask that sets the frequency of fire for each nozzle within the group on the basis of the health status of the nozzles employed in the printing process (**Col 26, Rows 53-60 and Rows 65-67**) after each drop test (**Col 24, Rows 5-15, the process of "error hiding"**);

wherein if it is determined that any element or nozzle made newly available for subsequent pass of printing has a lower probability of working than nozzles within the current group, it is initially set to a frequency of firing that is lower than the frequency of firing of nozzles with higher probabilities of working (**Col 27, Table 7, initial printmask, Col 28, Table 9, updated printmask, and see Col 27-28, the process for designing a updated printmask, the lower frequency of firing being zero. That is, the examiner understands the act of firing an inkjet inherently implies a predetermined inkjet firing frequency that is not zero wherein restricting an inkjet from firing by a printmask implies a firing frequency of zero because zero ink was jetted during said pass**).

wherein faulty printing elements, as identified by a faulty printing element database, are excluded from being made available to the group (**Fig 11, Step 1130 and see Col 19, Rows 22-30 and see Col 17, Rows 40-45, nozzles identified as permanent defect are excluded from being service and hence from ever being assign a frequency of firing ink in any subsequent modification of printmask**).

It would've been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of the combined teachings with the hardwares and softwares to implement the drop detection test, nozzle health status determination, work probability

calculations, and printmask designing as taught by ***Girones*** so as to adaptively assign workload and frequency of firing to nozzles newly introduced in a subsequent pass of printing on the basis of its latest health status whereas the motivation would've been to provide a printer with error hiding capability that ensures minimum acceptable printing quality in the event that any printhead nozzle is determined to be in a state of failure or with a high probability of failure (***Girones*, Col 24, Rows 1-14**).

10. Response to Arguments:

1. **In response to Appellant's argument "**Neither Masuyama nor Fuse, whether considered alone or in combination, teaches or suggests that each element newly made available to the group is initially made available for use *less frequently than the existing element(s) in a subsequent pass of printing*" **at Page 9 as support by arguments presented on Pages 9-14.**

The examiner disagrees with appellant's assessment.

To support the above allegation, the appellant argued "Thus, at a minimum, (i) Fuse does not discuss the frequency of use of a newly made available element; (ii) Fuse does not discuss using one subset of elements in a printing group less frequently than another subset of elements in a printing group; and (iii) Fuse is not related to a subsequent pass of printing (since Fuse is related to a preparatory stage)" (**Middle of 1st paragraph, Page 14 of Appeal Brief**).

Fuse provides a secondary teaching to modify a primary teaching provided by ***Masuyama***. It is not critical that ***Fuse*** discloses each and every limitations recited by the

claim, but it is critical that ***Fuse*** provides the teaching, motivation, and suggestion to combine with ***Masuyama*** such that the combination as a whole teaches every limitation required by the claims.

Masuyama discloses a method for multi-pass printing (**Col 5, Rows 15-35**) wherein it initially commence printing using a subset of nozzles and increasing the number of nozzles available to print during the course of printing (**Col 5, Row 59 – Col 6, Row 20 in view of Figs 4 and 6**). In an attempt to rectify prior art deficiencies to compensate for difference in temperature between nozzles already in use and nozzles just beginning to be used (**Col 1, Row 60 – Col 2, Row 4, which would cause image deterioration if printed**), ***Masuyama*** prepares newly introduced nozzles made available for a subsequent pass of printing to perform a series of preliminary ejections prior to the subsequent pass of printing (**Col 6, Rows 15-20 and Col 7, Rows 10-25**). As a result, newly introduced nozzles are fully operational at the beginning of the subsequent pass of printing.

However, ***Masuyama*** recognized or suggested that this preliminary ejection has two draw backs: (1) it wastes ink because said ink is not being used to reproduce actual print data (**Col 10, Rows 60-62**) and (2) it wastes time because the time for preliminary ejection could've been used for actual printing (**Col 10, Rows 63-65**). Even ***Masuyama*** proposed an embodiment to eliminate the preliminary ejection stage in its sixth embodiment (**Cols 9-10**).

In view of these problems, ***Fuse*** offers an effective solution. Essentially, nozzles in ***Fuse*** are left unused for days and great care must be taken to prepare said nozzles to begin printing (**Col 13, Rows 15-35**), **a dilemma that troubled newly introduced nozzles that**

are beginning to be used in a subsequent pass of printing of ***Masuyama***. To do so, a preparatory head drive mode is applied to prepare the nozzles to begin printing (**Col 14, Rows 35-44**) wherein (1) nozzles are driven at a print frequency that is less than normal print frequency (**Col 15, Rows 60-63, mode (1), Col 16, Rows 53-58, mode (2), Col 17, Rows 61-64, mode (3), Col 18, Rows 32-35, mode (4) in view of Col 12, Rows 39-38, in preparatory head rive modes, drive frequency of each nozzle is lower than drive frequency of all nozzles in normal print drive conditions when all nozzles are printing**) and (2) instead of wasting ink by preliminary ejection in ***Masuyama***, print data are actually feed to the printhead so as to drive its constituent nozzles to eject ink to form the data (**Col 15, Rows 1-12**) at said lesser frequency.

One of ordinary skill in the art at the time of the invention would've recognized the obvious benefit suggested by ***Fuse*** in meeting ***Masuyama***'s deficiencies: (1) nozzles are actually driven to expel ink for forming print data and thereby conserving ink from being unnecessarily wasted in preliminary ejections and (2) instead of allocating a specific period of time for nozzles to perform preliminary ejection prior to subsequent pass of printing, nozzles that are beginning to be use can immediately start subsequent pass of printing, albeit at a lesser frequency . Therefore, it would've been obvious to one of ordinary at the time of the invention to modify the printhead of ***Masuyama*** to use elements or nozzles newly made available to a group of printing nozzles less frequently **in a subsequent pass of printing** or to set head drive frequency of nozzles newly made available to be lower than the normal print head drive frequency of existing elements whereas the motivation would've been to

prepare printhead for printing with reduced ink and preparation time consumption (***Fuse*, Col 3, Rows 20-40**).

For at least the above reasons, the examiner respectfully submits that ***Masuyama*** in view of ***Fuse*** meets every limitation required by Claims 1 and 11 and therefore it is sufficient to sustain the ground of rejections set forth in all relevant dependent claims.

2. **In response to Appellant's Argument "**Neither Masuyama nor Fuse, whether considered alone or in combination, teaches or suggests that the number of elements in the group available to print is *increased as a function of the number of firing pulses sent to the elements of the group,* as recited in claim 1, or that the number of elements in the subset of that group *is increased in dependence upon the cumulative number of firing pulses sent to the elements of the group during the printing of the printjob,* as recited in claim 11" **at Page 15 of the appeal brief, as supported by arguments presented on Pages 15-16**.

The examiner disagrees with appellant's assessment.

Masuyama made it very clear that a nozzle will eject ink **if and only if** a P1 pulse is sent to said nozzle (**Col 10, Rows 25-30**). In view of Fig 4 where four nozzles are in use to eject ink at pass N, seven nozzles are in use to eject ink at pass N+1, and ten nozzles are in use to eject ink at pass N+2, the examiner deduced from facts that four P1 firing pulses are needed **to cause the nozzle** to eject ink at Pass N, seven P1 firing pulses are needed at Pass N+1, and ten P1 firing pulses are needed at Pass N+2. In this manner, increasing number of nozzles available for use in a plurality of passes from N to N+5 is caused by increasing number of P1 firing pulses being sent to the nozzles from pass N to N+5.

Therefore, the number of elements in the group available to print is increased as function of number of P1 firing pulses.

For at least the above reasons, the examiner respectfully submits that ***Masuyama*** in view of ***Fuse*** meets every limitation required by Claims 1 and 11 and therefore is sufficient to sustain the ground of rejections set forth in all relevant dependent claims.

3. **In response to Appellant's Argument "**neither cited references, whether considered alone or in combination, teaches of suggests that "the number of elements in the subset of that group is increased in dependence upon the cumulative number of firing pulses sent to the elements of the group during the printing of the printjob," as recited in claim 11" **at Page 17 of the appeal brief**.

The examiner disagrees with appellant's assessment.

As explain by the examiner in the previous section, ***Masuyama*** discloses the number of elements in the group available to print is increased as function of number of P1 firing pulses. As such, ***Masuyama*** in view of ***Fuse*** meets the claimed limitation required by Claim 11. For example, at Pass N, there are four nozzles ejecting ink because a total or an accumulation of four firing pulses P1 are sent to said four nozzles. At Pass N+1, there are seven nozzles ejecting ink because a total or an accumulation of seven firing pulses P1 are send to said seven nozzles. At Pass N+2, there are ten nozzles ejecting ink because a total or an accumulation of ten firing pulses P1 are send to said ten nozzles.

4. **In response to Appellant's Argument "**The combination of Masuyama and Fuse is improper" **at Page 17 of the appeal brief**.

The examiner disagrees with appellant's assessment.

While it is true that nozzles in ***Masuyama*** can eject ink stably on their first use, however, ***Masuyama*** also recognized or suggested that the **preliminary ejection of ink that prepared** the nozzles to eject ink stably on their first use has two draw backs: (1) inks are unnecessarily wasted instead of being applied to print actual data (**Col 10, Rows 60-62**) and (2) the amount of time used by said series of preliminary ejection could've been used to print actual data and therefore wasted (**Col 10, Rows 63-65**). This recognition even prompted ***Masuyama*** to propose an alternative embodiment as a solution to this problem (**Sixth Embodiment**).

As explained by the examiner in section (1) of examiner's response with respect to the teachings of ***Fuse***, one of ordinary skill in the art at the time of the invention would've recognized the obvious benefit suggested by ***Fuse*** in meeting ***Masuyama***'s deficiencies. Therefore, ***Fuse*** is used to rectify ***Masuyama***'s **drawbacks in preparing** the nozzles to eject ink stably.

For at least the above reasons, the examiner respectfully submits that it is proper to combine ***Masuyama*** in view of ***Fuse***.

- **In response to appellant's argument per Claims 9 and 17**:

The appellant is correct to point out the heading for the rejections of Claims 9 and 17 are inappropriate. There appears to be confusion in the heading where instead of the correct "Claims 9 and 17 are rejected under 35 USC 103(a) as being unpatentable over the combined teachings of ***Masuyama et al. (US 6871934 B2)*** and ***Fuse (US 5673071 A)*** in view of ***Audi***

et al. (US 6705697 B2)", it is "Claims 9 and 17 are rejected under 35 USC 103(a) as being unpatentable over the combined teachings of ***Masuyama et al. (US 6871934 B2)*** and ***Girones et al. (US 6238112 B1)*** in view of ***Audi et al. (US 6705697 B2)"***.

However, the substance or the ground of the rejection remains correct because the combination of ***Masuyama*** in view of ***Fuse*** (**correct heading**) or ***Girones*** (**incorrect heading**) are deficient in that they all failed to disclose the limitation required by Claims 9 and 17. ***Audi*** discloses said limitation and it would've been obvious to modify the combination in the manner and reasons stated in the final rejection.

Therefore, the examiner chooses to maintain the rejection for the correctness of its substance or ground rather than withdrawing the rejection for the incorrectness of its formality.

If the honorable board chooses to reverse examiner's rejection on Claims 9 and 17 for reasons of formality, the examiner will issue a new office action replacing ***Girones*** with ***Fuse*** in the heading of rejection of Claims 9 and 17 without altering the substance of the rejection; unless of course the board reverses examiner's rejection of Claims 1 and 11 as well or Claims 9 and 17 on the basis of substance.

5. **In response to appellant's arguments presented on page 20 of the appeal brief:**

The examiner's office action pertaining to Claim 8 directed appellant's attention to at least Col 27-28 and Col 17, Rows 40-45 and Col 19, Rows 22-30 of ***Girones***. ***Girones*** discloses a database containing records of health status for each and every nozzle within a printhead; for example, DDMap (**Col 17, Rows 11-13, health status of each nozzle**) and

PermMap (**Col 17, Rows 25-28, nozzles identified to be permanently out or faulty nozzles**). Essentially, the section quoted by the examiner and cited by the appellant on Page 20 describes how a database would identify faulty nozzles by calculating the probability of failure for each nozzle and store relevant data into the database. On the basis this database, a printmask (**Col 27-28**) is designed such that nozzles identified to be malfunctioning are replaced by functioning nozzles in a subsequent pass of printing (**Col 27, Rows 20-30**) such that malfunctioning or faulty nozzles are excluded from being made available for printing.

Considering that ***Masuyama*** concerns multi-pass printing of commencing printing with a first subset of nozzles and subsequently introduce a new subset of printing could contain faulty nozzles, ***Girones*** presents a viable solution by introducing a printmask that "hides" or exclude faulty nozzles from subsequent pass of printing.

For the reasons stated above, the examiner believes that the rejections are proper.

11. Related Proceeding(s) appendix:

No decision rendered by a court or the board is identified by the examiner in the related appeals and interferences section of this examiner's answer.

For the above reasons, the examiner sustains the rejections as set forth in the final rejection.

Respectfully submitted,

Conferee:

/Richard Z. Zhu/
Examiner, Art Unit 2625
06/17/2009

/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625

/Edward L. Coles/
Supervisory Patent Examiner, Art Unit 2625